THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FUK H. P. NG and SHIVALING S. MAHANT-SHETTI

Appeal No. 1997-1416
Application 08/277,386

ON BRIEF

Before JERRY SMITH, BARRETT and FLEMING, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 17-29 and 45-57, which constitute all the claims remaining in this application. An amendment after final rejection was filed on April 13, 1995 but was denied entry by the examiner.

The invention pertains to an apparatus for subtracting or adding two thermometer coded words which each include a plurality of bytes. In thermometer coding, the value of a number is represented by a number of right justified “1" bits. For example, the number “3" would be represented as 0111 in a four bit system. Obviously, as the number to be represented increases, the number of bits required to represent the number grows rapidly. One way to reduce the amount of circuitry necessary to operate on thermometer coded numbers is to code each digit or byte of a number as a separate thermometer coded value. For example, in the same four bit system, the number “31" would be represented as 0111 0001 with each digit coded separately.

Representative claim 17 is reproduced as follows:

17. A computer implemented method of subtracting two thermometer coded words, comprising:

detecting a first borrowing condition in response to a first word and a second word;

detecting a second borrowing condition in response to said first and second words;

decreasing a value of a first most significant byte corresponding to said first word in response to said first borrowing condition;

decreasing a value of a second most significant byte corresponding to said second word in response to said second borrowing condition;

subtracting said first most significant byte from said second most significant byte to obtain a first result; and

converting said first result into proper thermometer code format.

No references are relied on by the examiner.

The following rejections are on appeal before us:

1. Claims 17-29 and 45-57 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter in the form of a mathematical algorithm.

2. Claims 17-29 and 45-57 also stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the invention.

3. Claims 17-29 and 45-57 stand provisionally rejected under the judicially created doctrine of double patenting over the claims of Application No. 07/954,133[1].

Rather than repeat the arguments of appellants or the

[1] Application 07/954,133 is a parent application to this application on appeal. The parent application has since issued as U. S. Patent No. 5,699,287 granted on December 16, 1997.

examiner, we make reference to the briefs and the answers for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner, and the arguments set forth by the examiner in support of the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs in support of their position that the examiner's rejections are not properly made.

It is our view, after consideration of the record before us, that claims 17-29 and 45-57 define subject matter which may properly be the subject of patent protection. We are further of the view that claims 18-29 do not particularly point out the invention in a manner which complies with 35 U.S.C. § 112. Finally, we agree with the examiner that the claims on appeal would improperly extend the term of Patent No. 5,699,287. Accordingly, we affirm.

We consider first the rejection of claims 17-29 and 45-57 under 35 U.S.C. § 101 as being directed to non-statutory subject matter in the form of a mathematical algorithm. In the original examiner's answer, this rejection was made using the Freeman-Walter-Abele test. See In re Freeman, 573 F.2d 1237, 197 USPQ 464 (CCPA 1978) as modified by In re Walter, 618 F.2d 758, 205 USPQ 397 (CCPA 1980) and In re Abele, 684 F.2d 902, 214 USPQ 682 (CCPA 1982). This case was remanded to the examiner by the Board to consider the effect on this appeal by the decisions in State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 47 USPQ2d 1596 (Fed. Cir. 1998), cert. denied, 119 S. Ct. (1999) and AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir. 1999). Upon remand and consideration of these decisions, the examiner determined that the rejection was still appropriate [supplemental answer].

More particularly, the examiner finds the mathematical algorithm of the claimed invention to be nothing more than an abstract idea with no practical application or useful result. Appellants argue that a series of specific operational steps to be performed on or with the aid of a computer is a

statutory process.

We agree with appellants that the invention as set forth in the appealed claims represents statutory subject matter. As the Federal Circuit noted in State Street, supra, the focus should be on the practical utility of the claimed subject matter. In our view, a method being run on a computer inherently has practical utility and represents more than a mere abstract idea. An abstract idea is no longer abstract when it becomes tied to implementation on a computer. As long as this computer-implemented process satisfies other conditions of Title 35, it is properly the subject of patent protection. Therefore, we hold that the appealed claims before us, which require the presence of a computer to implement the process, are directed to a useful invention within the meaning of 35 U.S.C. § 101.

We now consider the rejection of all the appealed claims under the second paragraph of 35 U.S.C. § 112. With respect to claim 17, the examiner asserts that the term borrowing lacks meaning as used in the claim. Additionally, the examiner finds the phrases “value of the first most significant byte” and “value of the second most significant

byte" to be indefinite because it is allegedly unclear whether the initial or modified values are involved in the subtracting step, and the claim language does not require the first most significant byte to be smaller than the value of the second most significant byte [answer, pages 3-4]. With respect to claim 18, the examiner finds the subtracting step to be unclear because there are not two translated bytes as claimed [id., page 4]. With respect to claim 45, the examiner asserts that the phrase "converting said first result" is indefinite because some cases require converting the inverted first result rather than the first result. Finally, the examiner asserts that claim 46 is indefinite because the steps are not related to the steps of claim 45 [id.]. Appellants argue that the claims are definite and that the examiner is unnecessarily requiring them to narrow the claim under the rubric of indefiniteness [brief, page 15 and reply brief, page 2].

The general rule is that a claim must set out and circumscribe a particular area with a reasonable degree of precision and particularity when read in light of the disclosure as it would be by the artisan. In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). Acceptability

of the claim language depends on whether one of ordinary skill in the art would understand what is claimed in light of the specification. Seattle Box Co., v. Industrial Crating & Packing, Inc., 731 F.2d 818, 826, 221 USPQ 568, 574 (Fed. Cir. 1984). Finally, the legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope. In re Warmerdam, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994).

Considering the first point raised by the examiner above with respect to claim 17, we are of the view that the examiner has confused the breadth of the claim with indefiniteness of the invention. The first and second words of claim 17 have a borrow condition as shown in Figure 1 of the application [blocks 12, 14, 18 and 20] and as described in the specification. The fact that the claim does not recite the details of the borrowing condition goes to the breadth of the claim rather than to its indefiniteness.

With respect to the second point raised by the examiner, the subtracting step of claim 17 is not indefinite. At the time the subtracting step takes place, the value subtracted is whatever is the current value of that byte. The fact that the

subtracting step involves values based on the claimed borrowing conditions does not render the method indefinite. The artisan would have recognized that the claimed subtracting step operates on the original values or the decreased values of the most significant bits depending on whether or not the claimed conditions have been satisfied. Thus, we find nothing indefinite about the step of subtracting as recited in claim 17. The examiner's assertion that the smaller value must be subtracted from the larger value appears contrary to the disclosed invention. The subtractor 24 is described as being an absolute value subtractor which performs the subtraction by performing an exclusive-OR operation on each of the bits of the most significant byte of each word. Thus, the invention as disclosed performs the subtraction without regard to which of the two values is the larger. In other words, the "condition" required by the examiner that the claim be limited to the smaller value being subtracted from the larger value is without support in the description of the invention.

With respect to claim 18, we agree with the examiner. Claim 18 recites that a translated first least significant byte is subtracted from a translated second least significant

byte. The examiner correctly points out that one of the two values subtracted in subtractor 32 of Figure 1 remains untranslated [specification, paragraph bridging pages 8-9]. Thus, the subtraction operation as recited in claim 18 is never performed by the invention as disclosed. Since the operation recited in claim 18 is contrary to the disclosed invention, we agree with the examiner that claim 18 does not satisfy the second paragraph of 35 U.S.C. § 112.

With respect to claim 45, we find the claim to be in compliance with 35 U.S.C. § 112. Although the claim might be clearer and more accurate if the converting step read "converting said first result or said inverted first result into proper thermometer code format," the claim is still not indefinite. The artisan interpreting this claim in light of the specification would understand that the phrase "said first result" refers to the first result if no inverting step has been performed or to the inverted first result if the inverting step was performed.

With respect to claim 46, we do not see the indefiniteness asserted by the examiner. The steps of claim 46 appear to be performed independently of the steps of claim

45 since they operate on different bytes of the two words. Therefore, the steps of claim 46 are performed independently of the steps of claim 45, and the steps of claim 46 are not sequentially related to the steps of claim 45.

In summary, we agree with appellants that the artisan having considered the specification of this application would have no difficulty ascertaining the scope of the invention recited in claims 17 and 45-57. Therefore, we do not sustain the rejection of these claims. We agree with the examiner, however, that claim 18 is misdescriptive. Therefore, the rejection of claim 18, and claims 19-29 which depend therefrom, under the second paragraph of 35 U.S.C. § 112 is sustained.

We now consider the provisional rejection of all appealed claims under the judicially created doctrine of double patenting over the claims of copending Application No. 07/954,133 (now U.S. Patent No. 5,699,287). The basis of this rejection is that the appealed claims are merely method versions of the claims of the

copending application which would improperly extend the term

of the patent granted on the copending application. Appellants do not contest the merits of the rejection, per se, but appellants argue instead that there is no authority for such a provisional rejection.

As noted above, the copending application upon which the provisional rejection was based has now issued as a patent. Therefore, the provisional aspects of the rejection are removed. We have considered the claims of the issued patent and agree with the examiner that, to a great extent, the appealed claims are merely the apparatus claims of the patent redrafted as corresponding method claims. The similarity between the device claims of the patent and the computer implemented method of the appealed claims is sufficient to establish a prima facie case of improper double patenting. Since a prima facie case has been established, and since appellants have not responded to the rejection on the merits, we sustain the examiner's rejection of all the appealed claims on double patenting. As noted by the examiner, a terminal disclaimer would overcome this rejection.

In conclusion, the rejection of the appealed claims under 35 U.S.C. § 101 is reversed, the rejection under 35 U.S.C. §

112 is

affirmed as to claims 18-29 but is reversed as to claims 17 and 45-57, and the rejection of the appealed claims based on double

patenting is affirmed. Accordingly, the decision of the examiner rejecting claims 17-29 and 45-57 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

JERRY SMITH Administrative Patent Judge	)	
LEE E. BARRETT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
MICHAEL R. FLEMING Administrative Patent Judge	)	

JS/ki

W. Daniel Swayze, Jr.
Texas Instruments, Inc.
P.O. Box 655474 MS 219
Dallas, TX 75265